QA: NA

Lee Morton 06/15/2007 05:06 PM

MOL.20070910.0120

To: Jane Summerson/YD/RWDOE@CRWMS, Joseph Rivers/YD/RWDOE@CRWMS
cc:
Subject: BSC technical input due 6/15/07

8/7/07

LSN: ~~Not~~ Relevant ~~- Privileged~~
User Filed as: Excl/AdminMgmt-14-4/QA:N/A

Management of Repository - Generated Waste and Hazardous Materials:

1. Description of the activities and facilities that potentially will generate the wastes listed in Item 2 below.
2. Annual and total quantities of nonhazardous industrial, sanitary, hazardous, mixed (both hazardous and radioactive), and radioactive wastes generated to cover the four phases (Pre-Construction Testing and Performance Confirmation, Construction, Operation and Monitoring, and Closure) of the project lifecycle. In lieu of this information, other information, as described in the Technical Approach section, can be provided that will allow for the above information to be generated.

Concerning the request for information regarding "Management of Repository-Generated Waste and Hazardous Materials" for Nuclear Operations:

- LLW will be created at the site in the forms of incidental waste (booties, gloves, tape, etc.), filter and resin from the fuel pool which will be high dose rate LLW, and the Dual Purpose Canister (DPC) carcasses, the rate for which is best estimated by the Total System Life Cycle Cost model. 333 DPCs are the current total DPCs estimated for the life of the Wet Handling Facility for the 70 MTHM case. Estimates of resin and filter cartridges are not yet available.

- Hazardous and mixed waste should be minimal and typical of a light industrial use facility for Nuclear Operations.

The only information Nuclear Operations has for the waste-management approach is the following approved statements from ES&H:

- "Site-generated, low-level radioactive waste will be controlled and disposed of in a DOE low-level waste disposal site, an Agreement State site, or in an NRC-licensed site subject to the completion of the appropriate review pursuant to the National Environmental Policy Act. Other solid wastes, including hazardous wastes, are disposed at approved off site facilities."

Attached hereto to additional information for this data call:

Waste Quantities for Mitchem.xls

QA: NA

MOL.20070809.0005

	FTEs	Total	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	OPS		121	249	261	297	323	370	385	385	385	385	385	385
	MAINT		70	139	139	142	144	149	150	150	150	150	150	150
	ESH		61	125	130	138	144	154	157	157	157	157	157	157
	QC		24	49	51	63	71	86	91	91	91	91	91	91
	OTHR		58	116	117	130	140	158	164	164	164	164	164	164
	MGMT		35	72	77	82	86	92	94	94	94	94	94	94
Total			**367**	**751**	**775**	**853**	**908**	**1,008**	**1,041**	**1,041**	**1,041**	**1,041**	**1,041**	**1,041**

		Total	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Waste Packages		**17,448**	79	155	212	269	347	346	351	362	385	409	431	412
Total BF Casks Received		**5,159**	19	47	70	156	186	172	163	161	154	154	101	109
Total Shipments		**20,858**	101	199	271	440	558	555	596	564	596	620	564	579
Total Aging Overpacks		**2,913**	3	8	11	36	62	73	101	78	74	87	58	80
Total WHF TADs		**1,994**	6	11	30	30	30	30	30	30	30	29	30	30
Total DPCs Received		**920**	9	11	11	14	28	22	16	16	10	17	8	20
Total DPCs Processed		**920**	6	7	18	9	10	7	8	7	3	7	11	15

			1	2		2								13
Phase		**Total**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
1	**IHF**	**18**	IHF	IHF	IHF	IHF	IHF	IHF	IHF	IHF	IHF	IHF	IHF	IHF
	WHF	**57**	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF
	CRCF-1	**44**	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1
2	**RF**	**39**		RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF
3	**CRCF-2**	**43**				CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2
4	**CRCF-3**	**52**						CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3

Partial Year Operations

	All		50%											
	RF			42%										
	CRCF2					58%								
	CRCF3							75%						
Solid Waste (Trash) Volume @ 10CF/FTE (CF x 1000)			3.7	7.5	7.8	8.5	9.1	10.1	10.4	10.4	10.4	10.4	10.4	10.4
LLW Solid Volume (CF x 1000) (excludes DPCs)			8.8	18.4	19.5	20.5	21.3	22.6	23.1	23.1	23.1	23.1	23.1	23.1
LLW Water Volume (gal x 1000)			31.5	63.5	64.2	68.0	70.7	75.6	77.2	77.2	77.2	77.2	77.2	77.2
LLW DPC (each)			6.0	7.0	18.0	9.0	10.0	7.0	8.0	7.0	3.0	7.0	11.0	15.0
Volume of DPC multiplied by the # of DPCs (assuming the average volume of a DPC is 10.6 cubic meters).			63.6	74.2	190.8	95.4	106	74.2	84.8	74.2	31.8	74.2	116.6	159

Lee Morton 6/15/07
Management of Repository-Generated Waste and Hazardous Materials

QA: NA

	FTEs	Total	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
	OPS		385	385	385	385	385	385	377	377	377	377	377	377	377	377	377
	MAINT		150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
	ESH		157	157	157	157	157	157	156	156	156	156	156	156	156	156	156
	QC		91	91	91	91	91	91	89	89	89	89	89	89	89	89	89
	OTHR		164	164	164	164	164	164	164	164	164	164	164	164	164	164	164
	MGMT		94	94	94	94	94	94	92	92	92	92	92	92	92	92	92
Total			**1,041**	**1,041**	**1,041**	**1,041**	**1,041**	**1,041**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**

		Total	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Total Waste Packages		**17,448**	397	429	436	441	402	484	399	387	380	382	386	361	374	362	391
Total BF Casks Received		**5,159**	118	160	125	54	97	105	120	155	173	122	114	193	148	210	157
Total Shipments		**20,858**	611	626	595	563	587	606	595	623	642	590	585	645	581	639	621
Total Aging Overpacks		**2,913**	113	71	51	73	107	159	82	97	120	102	97	139	108	121	106
Total WHF TADs		**1,994**	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Total DPCs Received		**920**	9	11	15	7	9	10	12	16	25	23	18	40	51	49	44
Total DPCs Processed		**920**	13	9	9	14	15	8	10	7	2	8	13	8	12	2	6

Phase		Total	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
1	**IHF**	**18**	IHF	IHF	IHF	IHF	IHF	IHF									
	WHF	**57**	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF
	CRCF-1	**44**	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1
2	**RF**	**39**	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF
3	**CRCF-2**	**43**	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2
4	**CRCF-3**	**52**	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3

erations

All
RF
CRCF2
CRCF3

10CF/FTE (CF x 1000)	10.4	10.4	10.4	10.4	10.4	10.4	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
excludes DPCs)	23.1	23.1	23.1	23.1	23.1	23.1	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4
	77.2	77.2	77.2	77.2	77.2	77.2	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9
	13.0	9.0	9.0	14.0	15.0	8.0	10.0	7.0	2.0	8.0	13.0	8.0	12.0	2.0	6.0
# of DPCs (assuming the															
cubic meters).	137.8	95.4	95.4	148.4	159	84.8	106	74.2	21.2	84.8	137.8	84.8	127.2	21.2	63.6

QA: NA

	FTEs	Total	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
	OPS		377	377	377	377	377	377	377	377	377	377	377	377	377	357
	MAINT		150	150	150	150	150	150	150	150	150	150	150	150	150	150
	ESH		156	156	156	156	156	156	156	156	156	156	156	156	156	147
	QC		89	89	89	89	89	89	89	89	89	89	89	89	89	85
	OTHR		164	164	164	164	164	164	164	164	164	164	164	164	164	163
	MGMT		92	92	92	92	92	92	92	92	92	92	92	92	92	84
Total			**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**1,028**	**986**

		Total	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Total Waste Packages		**17,448**	389	383	373	417	391	361	303	298	344	324	333	342	408	409
Total BF Casks Received		**5,159**	129	182	151	149	123	115	126	124	207	166	143	1		
Total Shipments		**20,858**	578	643	618	560	480	503	395	419	452	487	495	349	99	9
Total Aging Overpacks		**2,913**	92	113	120	65	38	49	60	28	52	4	40	35		
Total WHF TADs		**1,994**	30	30	30	30	30	30	38	73	103	64	44	40	40	40
Total DPCs Received		**920**	36	33	28	37	44	46	55	41	53	21	5			
Total DPCs Processed		**920**	10	7	5	9	11	14	15	13	16	20	18	30	31	30

			Emplacement Operations													
			22													
Phase		**Total**	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**
	IHF	**18**														
1	**WHF**	**57**	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF
	CRCF-1	**44**	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1	CRCF-1
2	**RF**	**39**	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	
3	**CRCF-2**	**43**	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2
4	**CRCF-3**	**52**	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3

erations

All
RF
CRCF2
CRCF3

10CF/FTE (CF x 1000)	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.9
excludes DPCs)	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	20.6
	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	74.6
	10.0	7.0	5.0	9.0	11.0	14.0	15.0	13.0	16.0	20.0	18.0	30.0	31.0	30.0
# of DPCs (assuming the														
3 cubic meters).	106	74.2	53	95.4	116.6	148.4	159	137.8	169.6	212	190.8	318	328.6	318

QA: NA

	FTEs	Total	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072
	OPS		357	357	357	293	293	195	195	195	195	195	195	144	144	144	144
	MAINT		150	150	150	139	139	103	103	103	103	103	103	52	52	52	52
	ESH		147	147	147	132	132	84	84	84	84	84	84	54	54	54	54
	QC		85	85	85	65	65	28	28	28	28	28	28	26	26	26	26
	OTHR		163	163	163	116	116	72	72	72	72	72	72	38	38	38	38
	MGMT		84	84	84	75	75	62	62	62	62	62	62	39	39	39	39
Total			**986**	**986**	**986**	**820**	**820**	**544**	**544**	**544**	**544**	**544**	**544**	**352**	**352**	**352**	**352**

		Total	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072
Total Waste Packages		**17,448**	423	391	395	247	163	149	157	145	124	124	120	40	39	40	40
Total BF Casks Received		**5,159**															
Total Shipments		**20,858**	4	4	3	2	4	2									
Total Aging Overpacks		**2,913**															
Total WHF TADs		**1,994**	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40
Total DPCs Received		**920**															
Total DPCs Processed		**920**	30	31	30	31	29	31	30	31	30	31	29	31	27	27	26

			4			2		11									
Phase		**Total**	**2058**	**2059**	**2060**	**2061**	**2062**	**2063**	**2064**	**2065**	**2066**	**2067**	**2068**	**2069**	**2070**	**2071**	**2072**
1	**IHF**	**18**															
	WHF	**57**	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF	WHF
	CRCF-1	**44**	CRCF-1	CRCF-1	CRCF-1												
2	**RF**	**39**															
3	**CRCF-2**	**43**	CRCF-2	CRCF-2	CRCF-2	CRCF-2	CRCF-2										
4	**CRCF-3**	**52**	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3	CRCF-3

erations

All
RF
CRCF2
CRCF3

10CF/FTE (CF x 1000)	9.9	9.9	9.9	8.2	8.2	5.4	5.4	5.4	5.4	5.4	5.4	3.5	3.5	3.5	3.5
excludes DPCs)	20.6	20.6	20.6	18.8	18.8	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	74.6	74.6	74.6	68.1	68.1	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6
	30.0	31.0	30.0	31.0	29.0	31.0	30.0	31.0	30.0	31.0	29.0	31.0	27.0	27.0	26.0
# of DPCs (assuming the															
3 cubic meters).	318	328.6	318	328.6	307.4	328.6	318	328.6	318	328.6	307.4	328.6	286.2	286.2	275.6

QA: NA

	FTEs	Total	2073																	
	OPS		144	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	MAINT		52	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
	ESH		54	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	QC		26	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	OTHR		38	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	MGMT		39	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Total			**352**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

		Total	2073
Total Waste Packages		**17,448**	7
Total BF Casks Received		**5,159**	
Total Shipments		**20,858**	
Total Aging Overpacks		**2,913**	
Total WHF TADs		**1,994**	7
Total DPCs Received		**920**	
Total DPCs Processed		**920**	3

Phase		Total	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091
1	IHF	18																			
	WHF	57	WHF	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	CRCF-1	44																			
2	RF	39																			
3	CRCF-2	43																			
4	CRCF-3	52	CRCF-3																		

erations

All
RF
CRCF2
CRCF3

10CF/FTE (CF x 1000)	3.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
excludes DPCs)	17.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	61.6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	3.0	**920.0**																		
# of DPCs (assuming the																				
cubic meters).	31.8	**9752**																		

QA:NA

	FTEs	Total																				
	OPS		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	MAINT		40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
	ESH		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	QC		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	OTHR		26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
	MGMT		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Total			**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

		Total
Total Waste Packages		**17,448**
Total BF Casks Received		**5,159**
Total Shipments		**20,858**
Total Aging Overpacks		**2,913**
Total WHF TADs		**1,994**
Total DPCs Received		**920**
Total DPCs Processed		**920**

			Monitoring																			
			50																			
Phase		**Total**	**2092**	**2093**	**2094**	**2095**	**2096**	**2097**	**2098**	**2099**	**2100**	**2101**	**2102**	**2103**	**2104**	**2105**	**2106**	**2107**	**2108**	**2109**	**2110**	**2111**	**2112**
1	**IHF**	**18**																				
	WHF	**57**	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	CRCF-1	**44**																				
2	**RF**	**39**																				
3	**CRCF-2**	**43**																				
4	**CRCF-3**	**52**																				

erations
- All
- RF
- CRCF2
- CRCF3

10CF/FTE (CF x 1000)		1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
excludes DPCs)		1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
		3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

# of DPCs (assuming the
cubic meters).

QA: NA

	FTEs	Total											
	OPS		8	8	8	8	8	8	8	8	8	8	8
	MAINT		40	40	40	40	40	40	40	40	40	40	40
	ESH		19	19	19	19	19	19	19	19	19	19	19
	QC		2	2	2	2	2	2	2	2	2	2	2
	OTHR		26	26	26	26	26	26	26	26	26	26	26
	MGMT		15	15	15	15	15	15	15	15	15	15	15
Total			**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

		Total
Total Waste Packages		**17,448**
Total BF Casks Received		**5,159**
Total Shipments		**20,858**
Total Aging Overpacks		**2,913**
Total WHF TADs		**1,994**
Total DPCs Received		**920**
Total DPCs Processed		**920**

														Closure									
														10									
Phase		**Total**	**2113**	**2114**	**2115**	**2116**	**2117**	**2118**	**2119**	**2120**	**2121**	**2122**	**2123**	**2124**	**2125**	**2126**	**2127**	**2128**	**2129**	**2130**	**2131**	**2132**	**2133**
	IHF	**18**																					
1	**WHF**	**57**	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	C	C	C	C
	CRCF-1	**44**																					
2	**RF**	**39**																					
3	**CRCF-2**	**43**																					
4	**CRCF-3**	**52**																					

erations

All
RF
CRCF2
CRCF3

10CF/FTE (CF x 1000)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	**558.8**
excludes DPCs)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	**1,266.0**
	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	**4,238.9**

# of DPCs (assuming the
3 cubic meters)

QA: NA

Low Level Waste Quantities												
Facility	DAW (CF)		Water (gal)		Resin (CF)		Pool Filters (CF)		Total Annual		Total Annual (x1000)	
	Weekly	Annual	Weekly	Annual	Weekly	Annual	Weekly	Annual	CF	Gal	CF	Gal
IHF	13	676	25	1,300					676	1,300	0.7	1.3
WHF	255	13,260	1000	52,000		160		160	13,580	52,000	13.6	52.0
CRCF-1	35	1,820	125	6,500					1,820	6,500	1.8	6.5
RF	35	1,820	25	1,300					1,820	1,300	1.8	1.3
CRCF-2	35	1,820	125	6,500					1,820	6,500	1.8	6.5
CRCF-3	35	1,820	125	6,500					1,820	6,500	1.8	6.5
LLW, SA, SS	30	1,560	60	3,120					1,560	3,120	1.6	3.1
Totals	**438**	**22,776**	**1485**	**77,220**		**160**		**160**	**23,096**	**77,220**	**23**	**77**

DPCs per year determined by TSM run: